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ABSTRACT

This module is an introduction to the legal and societal considerations which must be appraised when land application systems are being designed. It serves as an introduction to the federal legislation and state guidelines pertaining to land treatment. The main thrust of this module is to point out some of the concerns which a community is likely to express regarding land treatment proposals, and to illustrate the importance of open dealings with the community to foster public participation in the decision-making process. Zoning ordinances, the various planning and zoning boards, public acceptance, community concerns, economic and aesthetic factors are some of the concepts discussed in relation to land application. To illustrate each of these concepts, and the interrelationships among the various local bodies in a well thought out public acceptance campaign, two case histories are presented. (Author/BB)

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Land Application of Wastes

An Educational Program

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LAND APPLICATION OF WASTES - AN EDUCATIONAL PROGRAM

The objective of this program is to increase the knowledge of engineers, scientists, waste management specialists and other practitioners in the concepts and principles needed to properly utilize the potential of land for the application of wastes. It is designed for individuals concerned with waste disposal alternatives for municipal, industrial, and agricultural wastes. The modules in this Program incorporate knowledge from sanitary and environmental engineering, agronomy, soil science, agricultural engineering, economics, and law.

The program consists of some twenty-five modules and audio-visual materials as appropriate.

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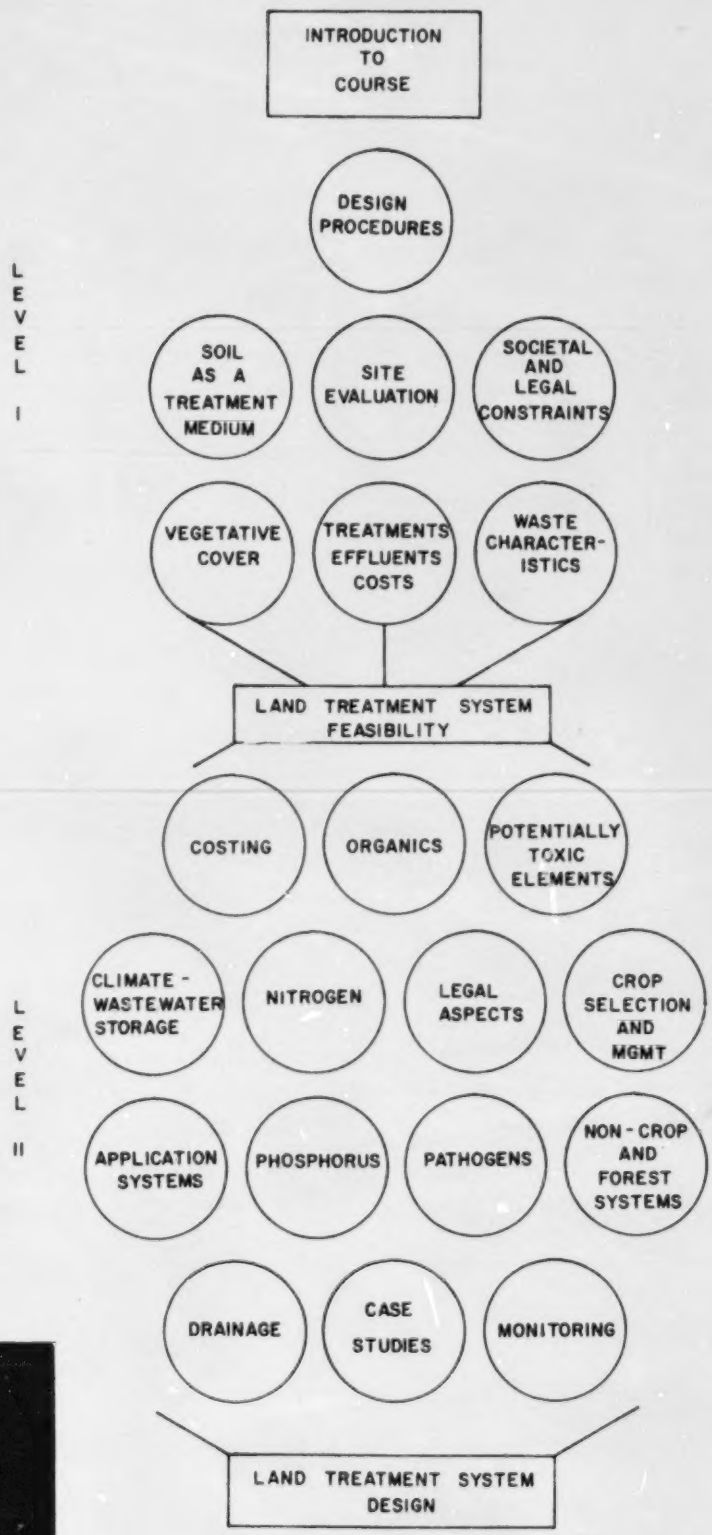

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SOCIETAL AND LEGAL CONSTRAINTS

Module 1

January, 1978

Summary

This module is intended as an introduction to the legal and societal considerations which must be appraised when land application systems are being designed. As a Level I module, "Societal and Legal Constraints" serves as an introduction to the federal legislation and state guidelines pertaining to land treatment which will be discussed in much greater detail in Module 16, "Legal Aspects".

The main thrust of this module is to point out some of the concerns which a community is likely to express regarding land treatment proposals, and to illustrate the importance of open dealings with the community to foster public participation in the decision-making process, thereby easing the way for more complete public acceptance of a project. The need for public acceptance of land application systems should be obvious to the design engineer. While each system must meet the provisions of federal and state guidelines to be approved for construction, local authorities can still block projects by various ordinances, legal action, and general unwillingness to consider specific options.

Zoning ordinances, the various planning and zoning boards, public acceptance, community concerns, economic and aesthetic factors are some of the concepts discussed in relation to land application. To illustrate each of these concepts, and the interrelationships among the various local bodies in a well thought out public acceptance campaign, two case histories are presented.

The Town of Newland case history is a hypothetical example in which the designers anticipate any potential difficulties and provide for them in their dealings with the public. The reader may prefer to study the example given in the Appendix. This is the sequence of events of an actual land application proposal by a food processing industry, illustrating the problems encountered with local governmental bodies and private citizens. The Appendix example depicts events which have actually occurred, but all names used are fictitious.

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Objectives

After reading this module, the participant should be able to do the following:

1. Name the federal law which revived interest in land application as a waste management alternative.

2. Explain the levels of government regulation which a design group must consider when planning for a land application system. Discuss possible influences of the municipality, township, county, regional planning authority, state, sanitary district, nation.

3. Discuss briefly the importance of good relations in the community in which the system is to be sited.

4. Describe the methods that are most successful for gaining public acceptance of land application. Discuss in relation to the examples given in this module.

5. Discuss the major objections a community might voice against the installation of a land treatment system. Give arguments against these objections.

Introduction

The majority of the available information on land application of wastes focuses on the technical aspects of this waste management alternative. Equally important to the success of land application systems is its acceptance by the public. The social and economic aspects are the most difficult for the project engineer to define and evaluate.

Public acceptance is often cited as a key determinant for the success of a land application project. Even if a site has all the appropriate characteristics for waste application, it may be inappropriate from the standpoint of the community in which it is located. It is costly to go through engineering studies and identify a site for waste application, and subsequent rejection by the community would make the process even more costly. To minimize the chance of the site being rejected on social grounds, the engineer must work with the community to ensure acceptance both of the general system design and the chosen site.

Public acceptance is a determining factor in the success of land treatment of wastes.

Concerns of the public focus on several specific issues. Is such a system legal? What federal and state regulations must be met? Will the proposed project meet these regulations? Legal requirements are discussed in greater detail in Module 16, "Legal Aspects".

Fear of disease being spread from a land application system is another factor which may prevent the public from accepting a land application system in their community. This concern would be reduced if the public had a better understanding of the treatment processes utilized prior to land application and of the mechanisms that occur after wastes are applied to the land that reduce the disease potential. Module 9, "Pathogens", discusses effects of pretreatment processes on pathogens and the threat these

The public's fear of disease from land treatment can be allayed by informing them about appropriate processes that are used to protect the public health.

pathogens pose in a land application system.

Related to the public health concern is the effect of toxic elements released to the environment at a land application site. No instance of toxic element poisoning of humans has been associated with land application systems. The fate of toxic elements in land application systems is discussed in Module 11, "Potentially Toxic Elements".

Fear of toxic elements is another public reaction to land treatment. No cases of toxic element poisoning of humans have been associated with land treatment.

Legal and health concerns are generally associated with proposed land application systems. Other concerns will be more specific to individual communities. These may include economic, aesthetic, political, and attitudinal concerns.

Public acceptance of land application as a waste management alternative is necessary. It is not sufficient, however, to merely address these concerns to the community. The engineer should plan to work with the community in getting a land application project accepted. Particularly, it is necessary to work with the community to discover just what specific concerns exist. Not only will a close working relationship between the project engineer and the community help to identify existing and potential problems, but it will increase the chances for final public acceptance of the project.

The project engineer should work closely with the community from the very beginning to discover its concerns and to discuss those concerns.

It is necessary and proper for the engineer to work with the community. Unfortunately, a close working relationship is only possible between the engineer and relatively few members of the community. Local government officials, community leaders, and members of special interest groups are the persons most likely to have the greatest interaction with the project engineer.

The engineer will work most closely with government officials, community leaders, and members of special interest groups.

It is necessary to include the general public in the planning stages of a land application system. The public should be invited to participate in the planning process, and the engineer must be willing

The engineer should invite the public to participate in the planning, and should be willing to incorporate public suggestions into the final decision.

to incorporate community-generated suggestions. In addition, it is wise to communicate with that portion of the community which does not take an active part in the design process. An effective public information program is necessary to keep the community well-informed as to the progress of the land application project.

Land Application is Both Encouraged and Restricted by Laws

Important federal legislation pertains to land application of wastes. The federal law which has been responsible for the renewed interest in land application of wastes is PL 92-500, the Federal Water Pollution Control Act Amendments of 1972. This Act places emphasis on waste management alternatives which are cost-effective and long range, and which emphasize reuse and recycling of waste products. The use of waste management sites for expansion of open space, recreation, and wildlife resources is also important in the law. Land application of wastes, more than any other treatment alternative, can meet the recommendations of PL 92-500.

PL 92-500 emphasizes waste management alternatives which are cost-effective and long range and which reuse and recycle waste products. Land application of wastes meets these recommendations more than any other treatment alternative.

Other laws which pertain to the practice of land application are the National Environmental Policy Act of 1969 (NEPA), the Safe Drinking Water Act, and the Resource Conservation and Recovery Act (RCRA). NEPA is the law which requires preparation of an impact statement for all projects involving Federal funds. It is likely that as more land application systems are developed, the impact statement may become a routine part of designing these systems.

NEPA requires an environmental impact statement to be filed for any project that uses federal funds.

The Safe Drinking Water Act sets forth National Primary Drinking Water Standards. These Standards apply primarily to groundwater which may be a source of drinking water. In several states, however, all groundwater is viewed as a potential source of drinking water. Land application systems discharging

to groundwater will, therefore, be forced to meet the standards developed by the Federal Government under the Safe Drinking Water Act in these states.

Safe Drinking Water Act sets standards for groundwater quality that land application systems must meet, if they discharge to groundwater used for drinking water supplies.

The Resource Conservation and Recovery Act establishes "acceptable" practices for the land disposal of "acceptable" practices for the land disposal of non-hazardous wastes, including sludge from waste treatment systems. It calls for the Environmental Protection Agency (EPA) to develop criteria to determine which disposal facilities are acceptable and which are unacceptable. Implementation of these criteria will rest solely on the state level. EPA is required to draw up public guidelines for the development of state plans and for the provision of financial assistance to state programs. EPA is also required to publish solid waste management guidelines. It is presently envisioned that the EPA criteria will both establish "environmental limits" where possible, and require the use of the best practicable technology where appropriate.

A glance at any of these laws will assure the design engineer that there is nothing in the text of the law which will help him with the design procedure. In most cases, laws stipulate that a commission will be seated to draw up recommendations on a specific point. Often, it may take months or years for these recommendations to be made, commented upon, and completed. In addition, after the recommendations are complete, cases challenging them may be taken to court, and the court decision then becomes the "law" that must be followed. While we will not spend time on the legal ramifications of effluent quality requirements, it is important to be aware of the various stages that requirements generated by Federal legislation go through. Additionally, requirements promulgated from one law may be used to fulfill the stipulations of another law. For

Federal laws often call for commissions to be set up which draw up recommendations on specific points. This process may take years to be completed and to become law.

example, the groundwater requirements drawn up under the Safe Drinking Water Act are also applicable to PL 92-500. This dual application of a set of requirements is discussed further in Module 16, "Legal Aspects".

It is important that the design engineer be aware of the requirements which limit or otherwise regulate the practice of land application of wastes on the Federal level. If the engineer chooses to keep abreast of legal developments, the Federal Register, a daily published record of Federal activities, is perhaps the best source of information. Other sources include discussions with state regulatory agencies and EPA regional offices.

The engineer must know Federal requirements which limit or otherwise regulate land application.

More Specific Regulations Found at State Level

More specific regulations and guidelines are found on the state level. In many cases, a federal law will empower the states to draw up their own regulations for a particular issue. For example, the 1948 Water Pollution Control Act gave primary responsibility for controlling water pollution to the states. Each state, in accordance with this law, has established water quality criteria for its waters. These criteria are used to regulate discharges to waters of the state, although the new regulations put less emphasis on this approach. Regulations for land application of wastes are likewise developed by individual states. To date, not all states have chosen to develop such guidelines. States regulate specific aspects of land application, such as application rates, soil characteristics, buffer zones, quality of applied wastewater, storage, monitoring programs, and so on. Trends in state guidelines are discussed in Module 16, "Legal Aspects". It is wise for the design engineer or the legal consultant to contact the state in which he will be working to ascertain the status of regulation of land application of wastes in that particular state.

Some states regulate specific aspects of land application, such as application rates, storage, buffer zones, soil characteristics, pretreatment.

Local Zoning Ordinances Must be Followed

On the local level, the design engineer must be aware of local restrictions which may affect the design, placement, and operation of a land application system. In most cases, the kinds of ordinances which will affect land application systems are those which deal with land use, public health, and nuisances. It should also be remembered that these local laws are changeable, and may be manipulated to eliminate land application as a cost-effective alternative waste management scheme.

The engineer must know local laws which will affect land application. They usually deal with land use, public health, and nuisances.

Good community rapport is a key goal in ensuring that ordinances placing land application at a disadvantage will not be passed. Perhaps most crucial in this respect are the land use ordinances, or zoning laws. Zoning laws regulate where different kinds of activities may take place in a community, and thus what kind of tax will be assessed against the different activities. This is important for land application systems, particularly those owned and operated by industry. In one area, a land application system using corn as the cover crop may be deemed agricultural. The same system, also with a corn crop, may be considered industrial in another area. There is a great difference in the tax rate for agricultural and industrial uses of land. Taxes may be a significant cost in terms of yearly operating expenses. It is essential that the engineer use a site which is zoned agricultural in order to keep taxes as low as possible. In the case of municipal land application systems, this will probably not be a consideration, since municipally-owned land is tax-free.

It is essential for the engineer to know local zoning laws because the land application site should be zoned agricultural in order to be most cost-effective.

In order to ascertain specific information about the community in which a land application system is to be installed, the design engineer or his legal consultant should meet with the appropriate County Planning Board, Town Clerk, and Village Clerk.

Even the smallest of municipalities may have regulations which could affect the planning and design of land application systems.

Community Has Large Influence on Success of System

The community in which a land application system is to be located will influence the design and operation of the system to varying degrees. Local ordinances must be complied with. Citizen groups in the community may wish to play a part in the planning of the project. It is important from the very beginning that interested citizens be given the opportunity to participate in the planning of the system. In recent years, citizens groups have gained increasingly in their ability to affect planning decisions at the local level. The citizens of a community are those who will have to live with the system after it is completed, and they should rightfully be able to comment and make suggestions about how the system may be modified to make it more acceptable.

Public participation in choosing a site fosters public acceptance of the system.

Public acceptance is a key goal in siting a land application system. The system may be perfectly designed, produce an effluent of drinking-water quality, and also support a golf course, but if the citizens of the community where it is located are against it, the system will have great troubles getting from the drawing board to the land.

Community Concerns About Land Application Vary

Several aspects of land application systems may cause citizen groups to fight against siting such a system in their community.

The question of public health is one of overriding concern. It is treated in detail in Module 9, "Pathogens".

Briefly, the public health question is this: Will land application of wastes cause an increase in disease in the community where it is located? Disease may be spread directly from the site, from vegetation

grown on the site and transported off-site, from aerosols spread from the sprinkler equipment, and from wildlife inhabiting the area.

Land application of wastes is, to many people, a reminder of years past, when improperly handled sewage caused widespread epidemics. These people fear that similar epidemics will result from land application. No incidents of disease have been documented from any planned and properly operated system in the United States.

Public fears of epidemics from improperly handled sewage still linger from many years ago. These fears must be allayed by disseminating information about the safety of land application as it is practiced today.

The public health issue is an emotional one. Careful and accurate explanations, the "kid-glove" treatment, may be needed to convince the community that land application as it is currently being practiced is safe and that it poses no greater threat to the community than does conventional treatment used all over the country. Site visits of interested and influential citizens to locations where land treatment is successful is an effective way of allaying concerns and sustaining interest.

Will Land Application Generate Nuisance Complaints?

Closely tied to the question of health problems is the nuisance problem which may result from land application. Odors and appearance are often the factors which prevent the siting of a land application system in a certain area. Both of these factors may be controlled by careful management of the system. Odors result primarily from anaerobic conditions. If the site is managed well and kept aerobic, odors should not be a problem. Aerobic conditions can be maintained by scheduling the application of wastewater carefully so that the soil has a chance to dry out between applications. This may require a larger site, but it will result in a more aesthetically pleasing one, and one which is more efficient at degrading organic waste material. Aerobic conditions are generally more desirable for waste application,

The public may fear that land application will create a nuisance by its odor and unsightly appearance. These fears should also be quelled through information about modern techniques.

unless denitrification is necessary. With good management practices of alternating soil aeration and flooding, or physical isolation of continuously flooded denitrification areas, any nuisance conditions from this process can be kept to an absolute minimum.

The appearance of the site is largely dependent upon the management scheme. If the wastewater is to be applied to a forest, there is less likelihood that complaints will arise because it is more difficult to see the application equipment. The operator of the system may chose to fence off the area to prevent public access. In fact, many states require that land application sites be fenced to prohibit public entry. A forest site that is inaccessible will only have to look pleasant along the perimeter to be acceptable to the public. Open sites not shielded by trees should be carefully managed to avoid complaints. Factors which make a site look bad include solids deposited on vegetation and ponding of surface water. These factors can be controlled by careful operation of the system. Solids may be removed by adequate screening, so that larger particles are not permitted on the site. If sludge is applied, it may be incorporated directly into the soil, or washed from vegetation with an application of wastewater. Ponding can be controlled by proper drainage and by using application rates which do not exceed the infiltration capacity of the soil. Ponding may also cause mosquitoes to propagate which may in turn spread disease. See Module 9, "Pathogens" for more on insect control. Thus, ponding should be carefully controlled at land application sites.

To avoid an unsightly land application site, operators should minimize deposition of solids on vegetation and surface ponding of water.

If the site is managed to provide a specific resource, such as a golf course, the appearance of the systems will automatically be integrated in the design and operation of the system. For example, ponding of the system would be allowed only where a "water hazard" is desired; these areas could then be

dosed with additional disinfectant to further reduce the threat of disease spread. Since the golf course must be manicured to allow play, the site operation must include planting of appropriate vegetation, mowing of grasses, and generally maintaining an immaculate appearance.

The majority of land application systems are based on a crop of one sort or another. At these sites, harvesting and removal of the crop should help the site to look good. A carefully designed and operated system may provide the only expanse of green in the community, and people may decide to take advantage of the open space provided by the system.

The regular harvest and removal of the cover crop at the land application site will keep it from being unsightly.

Community May Object on Economic Grounds

The community may also resist the idea of land application as a waste management alternative based on economic grounds. If the system is a large one, it may tie up many acres. This will have several economic effects on the community:

- Less land will be available for development; land costs may rise
- Land purchased by the municipality is not taxed; there will be less income from real estate taxes
- Land application systems may encourage new development not desired by the community
- Land values near the system may decline because people may not wish to live close to a land treatment system
- A large farm system on the site may compete with local farming interests
- If the system is mismanaged and fails, the land may be lost to the community for a long period of time
- Increased capacity for pollution control may attract additional industry

These same effects will be felt with smaller land application systems and even with other waste management alternatives. In the case of privately-owned systems, such as those owned by industries, several

of these problems will be avoided. For example, the land will remain on the tax rolls, and continue to create revenue for the municipality. Economic considerations should be carefully reviewed for the community so that citizens may assess how the land application system will affect them in terms of dollars. Some citizen groups will be more interested in the economic aspects of land application than others.

The effects of land application on the local economy must be carefully reviewed and discussed with the public to avoid fear based on ignorance.

Technical Experts Should Explain System

The technical community has the advantage of being able to view all aspects of a pollution control system much more closely than the average citizen. For this reason, it is necessary that the technical people explain the meaning of the system to the general population. The economic issue is a good place to start. A small community that is required to install tertiary treatment may read in the newspaper that an engineer has designed a system that costs $5,000,000. This is immediately translated by the taxpayer into cost per family in the community. Such a cost might turn out to be $2,500 per family and this might not be acceptable. If the general breakdown of costs is shown, and it is emphasized that a large part of the expense is paid for by the Federal government, the largest fraction of the remaining costs are for the continuing expenses of operation and maintenance. An interesting possibility of land application systems is the fact that if the site is managed well and a crop is produced, this revenue can offset a large share of the continuing costs of operation and maintenance (EPA, 1976). It is possible that the direct cost to an individual community will be low. For more discussion on crop revenues and the costs they offset, see Module 7, "Role of Vegetative Cover".

The costs of land application should be explained to the community by a technical expert who can compare the costs to those of advanced waste treatment and explain Federal assistance and revenues from crop production.

Several other considerations are important in

choosing a land application site. The system must not interfere with established areas of interest in the community. The location of sensitive environmental areas, historic landmarks and similar places must be pinpointed to assure that they will not be disturbed by the system. For more discussion on how these areas can be located, see Module 2, "Site Evaluation".

The site for land application must be chosen carefully so as not to interfere with areas of historic or environmental importance.

Site May Be Used To Attract Wildlife

A community may be interested in improving areas of interest. Wildlife habitats may be enlarged or enhanced using treated wastewater. If the community wants to improve habitat areas, but has hesitated because of the cost involved, the use of wastewater for this purpose may be a dual blessing -- the habitat areas will be created, answering the desires of the community, and the wastewater will be properly managed in the process of applying it to areas suitable for wildlife. The desires of the community can be incorporated into the management plan for land application. The effect of wastewater on wildlife is discussed in greater detail in Module 13, "Non-Crop and Forest Systems".

Wastewater may be used in maintenance of wildlife habitats or landscaped areas.

Wastewater May Be Used for Landscape Irrigation

Landscape areas may also use the water for irrigation. In several states, especially Colorado and California, reclaimed wastewater is used to irrigate college campuses, highway shoulders, and other municipally and privately owned green areas. Specific regulations govern the use of wastewater for landscape irrigation. The use of wastewater for these purposes decreases the cost of keeping large areas of grass healthy, at the same time recycling the wastewater. As long as the soils being irrigated are suitable for waste application, and safety precautions are taken, wastewater can be a useful resource to help keep a community green.

The public reaction to the reuse of wastewater

may depend on what the ultimate use will be. A study conducted in California communities indicates that the public is ready for large-scale reuse of renovated water for purposes that do not involve body contact with the renovated water, for instance, golf course irrigation, water for toilets, scenic lakes, garden irrigation, farm irrigation, and factory cooling processes. These study results should not be considered indicative of the kind of acceptance that may be encountered elsewhere because Southern California has had positive experiences with wastewater reclamation.

Public reaction to the reuse of wastewater will depend on what the ultimate use of the water will be.

Various Groups In Community Will Have Different Concerns

It is important to realize that there are several factions, or groups, within any community. They vary in how vocal they are, how demanding they are on the time of the project engineer, and how successful they are in effecting change in the community. The project engineer should be aware of the groups which are normally active in the community, the issues that are important to them, and the best way to work with them to arrive at compromises acceptable to all concerned.

Although the project engineer will probably not have time to talk with everybody, he should use his contacts in the community as sounding boards to find out specific community concerns. The engineer should be prepared for any questions likely to be raised from the floor at public hearings or town meetings.

The project engineer must be aware of the desires of special interest groups in the community and be ready to field any questions at public hearings and meetings.

One source of factual and statistical data is the Census Bureau. The Economic Development Administration may provide community economic profile reports. Regional and local planning authorities have data on land use, recreation, and employment/population projections. The best sources of information, however, are the feedback obtained at public hearings and meetings and from the public advisory board formed on the subject of land application.

Public Advisory Boards Ensure Citizen Input

A public advisory board is composed of representatives of various interest groups in the community population. A typical range of interests represented on such a board might include:

The project engineer may want to form a public advisory group composed of representatives from interest groups in the community.

-farmers representing irrigation districts

-property owners in areas that are being considered for sites of land application

-civic groups interested in community development, including the Chamber of Commerce

-conservation groups, such as the Sierra Club and the Audubon Society

Public participation can be organized in two ways: reactive or participative. In reactive programs, the major events in the planning process, such as the choice of possible sites, are presented to the public. Reactions to the information presented and the remarks of the participants should be strongly considered in the final screening and selection process.

A participative approach involves the public to a greater extent. The unique involvement of the public at all stages of development generates useful and informed feedback and public support. In the participative approach, there are more meetings and more public involvement in the selection of site process. A number of public hearings are held in which the alternatives are presented, and the advantages and disadvantages of each are listed. At the next meeting any new alternatives or advantages/disadvantages from the previous meetings are presented. Any rejected alternatives are explained along with the reasons for their rejection. This process is repeated until final site selection is made. See Warner (1971) and Sargent (1972) for fuller discussion of public participation.

The participative approach involves the public at all stages of development of the project, generating useful and informed feedback and public support.

Everyone in a community belongs to several groups, whether they identify themselves with these groups or not. For example, members of each church organization represent separate groups. Families with children are a group, as are families without

children, single persons, and families whose children have grown up and moved away. Each of these groups may have different attitudes and opinions toward changes in the community. For example, parents with young children may wish to have more recreational areas developed in the community. If a land application system which incorporates playing fields in its design can be developed, this group may support it more strongly.

More easily identifiable groups are those which represent specific interests such as labor unions, political organizations, special interest groups, and so on. Environmental groups are often in the forefront of conflict with developers. These groups may be vociferous and can be either positively or negatively oriented.

Environmental Issues Must be Handled Carefully

Purposeful and well organized groups can work for a better environment for the community, incorporating plans for development with plans for environmental enhancement. It is necessary to adequately inform and educate such groups about land application systems.

Land application can be an emotional issue, and a community may be easily aroused to oppose a land application system. A careful explanation of how land application systems utilize resources and recycle nutrients and water should help to convince the public of the worth of such a project in their community. Often, even if a site is not specifically managed for wildlife, it will attract songbirds and small mammals, and will in any case preserve acres of open space within the community. By keying arguments for land application to the specific interests of the group being addressed, the engineer or his representative will have a better chance of gaining the acceptance of each group, and finally, of the entire community. Of course, care must be taken that explanations are frank and truthful, and that they

Although the project engineer should key his presentation to the particular group he's addressing, he should never be inconsistent about the facts.

are consistent.

Groups Should Be Addressed According To Particular Interest

Each group may have a different view of land application systems, and be concerned with different problems, while the Chamber of Commerce will have questions regarding the effect of the system on the business sector of the community. In working with diverse groups, the engineer or his representative should keep in mind their different orientations and be able to work with each group according to the interests and concerns voiced.

In dealing with the groups within a community, it may be helpful to understand the orientation of the group to the problems posed by application of wastes to land. For instance, persons who own land adjacent to proposed sites, especially in agricultural areas, will be concerned about drainage and other problems of water management. Land application may be used in different ways in different communities; these differences should be explained in detail.

The type of waste to be applied to land will greatly affect the operation of the system. Sludge, wastewater, or a combination may be applied. If sludge is applied, several specific problems occur that are not as apparent with wastewater. Sludge has a less attractive appearance. It contains greater concentrations of the constituents which people fear--pathogens, toxic substances, and so on. Aesthetically, sludge application will be more acceptable if the sludge is incorporated into the surface layers of the soil. Incorporation also reduces the odor of sludge. Sludge may receive differing treatment prior to land application. Various treatment processes

The type of waste that is applied to the land greatly affects the operation of the site.

Sludge application will be more acceptable, aesthetically, if it is incorporated into the surface layers of the soil.

result in sludges with different amounts of pathogens, toxic substances, and odor potential. Sludge treatment alternatives prior to land application are discussed in Module 4, "Treatment Systems, Effluent Qualities and Costs".

Wastewater causes fewer problems of appearance because it is generally screened prior to application, and looks quite clean as it comes out of the sprinklers. Application rates should be adjusted to reduce potential for surface ponding. Pathogen problems are fewer with wastewater application, although there is a potential problem of aerosol transmission of pathogens. Aiming sprinkler heads downward, reducing nozzle pressure, and planting a generous buffer zone with hedgerow vegetation reduce the possibility of aerosol transmission of disease.

Sludge may be injected with the wastewater; both are then applied together. In this case, precautions cited above for control of odors and pathogen spread should be followed. Injection rigs usually include means to incorporate the waste directly into the soil, and since there is no sprinkler system, there is less possibility of aerosol transmission. However, this method of application is more costly than other methods.

Public Ideas About Waste Can Be Changed

Sewage and sludge may be perceived as objectionable, disease-causing, and dirty. Today few people even think about it -- out of sight, out of mind. In order to make land application of these wastes more acceptable to the community, it would be wise to change the perception of these wastes to a more positive one. The term pollution is often dropped in favor of the phrase "misplaced resources". Sewage and sludge may similarly be relabelled misplaced resources -- these wastes contain a high percentage of pure water, which in many parts of the country is a scarce resource, as well

The project engineer should work to change the public's perception of sewage from viewing it as dirty and objectionable to viewing it as a misplaced resource.

as nutrients which farmers and gardeners pay dearly for at the local fertilizer store. If the community can see land application of wastes as a means of recovering precious resources which otherwise would have to be bought and paid for, the system may be more acceptable.

Land Application Site Can Have Multiple Uses

The idea of multiple use management is one which has been gaining favor among resource managers. Land application systems may well lend themselves to multiple use management, thereby resulting in several benefits to the community in which it is located. A well-designed system may be operated to dispose of and further treat wastewater, while providing open space for a community, a playing field, and a crop of grain which could be sold to create revenue for the community. The more uses to which a system can be put, the greater will be its appeal to various groups in the community.

The land application site can be used for other purposes besides waste treatment including open space, a playing field, a field of crops.

The problem of energy is one which engineers and communities alike must face in the coming years. Land application is a waste management alternative which can be the most efficient in terms of energy use. Some systems may be designed to use practically no "manmade" energy at all, using instead the energy provided by gravity and the sun. For example, the Werribee Farm in Melbourne, Australia, uses electricity only for the primary treatment processes of the more than 150 MGD flow. The water is then distributed through the fields via a series of gravity flow ditches. The water flows by gravity, and is controlled at dikes which are opened and closed by hand. The cattle raised on the farm are herded by horses, also raised on the farm. Thus, the majority of energy used to run the system is provided by gravity, the sun, and animal power. As energy becomes more expensive, land application may prove increasingly cost-effective.

Land application can be the most efficient waste treatment system in terms of energy.

Public Information Plays An Important Part In Acceptance

Once the concerns of the public are known and the interest groups in the community have been identified, the project engineer or his representative should begin to work closely with those members of the community who show the most interest in the planned land application system.

The project engineer should work closely with those persons who are most interested in land application, e.g., the Sierra Club, League of Women Voters, Audubon Society.

Several organizations are easily identifiable in a community. The League of Women Voters may have a committee involved in the environmental area. This is a hard-working and dedicated group of people. Their support would be most helpful. A local Sierra Club group, if it exists, should be kept informed as to the progress of the project. If the system is intended to support any amount of wildlife, the local chapter of the Audubon Club should be interested in assisting the engineer in designing the system so as to be most beneficial to the local species.

If the system is to be municipally-owned, it can be assumed that the local officials feel that such a system will be acceptable to the public. This may not be the case where the system is privately owned, as in the case of a food processing plant. In either case, the desires of the community should be incorporated as much as possible into the final design of the system.

Even if the system seems to be acceptable to the community, it is necessary to keep in close touch with all community members. Active organizations will probably be informed by their involvement, but in order to keep everyone in the community aware of the project's progress, a newsletter might be published. A public information program is often necessary. It may include such diverse activities as newsletters, slide shows, public speaking, and site visits, and should be designed so as to appeal to the majority of the community. Close contact between the

A public information program may be necessary to insure public acceptance. It might include a newsletter, site visits, transporting people to a successful land treatment site in another area, public speeches, slide shows.

community and the design group will help to ensure final acceptance of the project by the community. Such a public information program may be run by the contracting engineer's firm, or it may be sub-contracted to a professional public relations firm.

Local Government Has Authority

Because land treatment systems are ultimately located within the bounds of a local government, the regulations and laws of that local government must also be considered.

This discussion is intended to provide a brief overview of how local government is organized, the functions it is mandated to carry out, and the powers it has to carry out these functions.

This discussion focuses on the structure and function of government at the local level, means of enforcing local powers, and the control that the local government has over land use in the area. Land use is of particular interest to those involved in installing land treatment systems, because of the great amounts of land that are usually needed.

The local community controls land use through building permits, ordinances, and zoning.

Planning and zoning powers of the local government, and the way these powers are enforced, namely through permits, ordinances, and taxes, will also be examined.

Each Political Jurisdiction Has Government

Towns, townships, villages and counties all have their own governments with powers specific to local affairs. Local government varies widely in its organization. The New England Town Meeting can be used as a model. This form of local government still functions in some regions of New England, and exists in a modified form in the rest of the Northeast.

Town officials include a moderator or supervisor, and a group of selectmen. These officials are elected. The selectmen, or Town Board, create and change local laws, and authorize work on town property. They create and oversee zoning, health, and nuisance laws, all of which pertain to the design and operation

of land treatment sites. A land treatment system must meet the requirements of these local laws in order to operate. A Town Clerk has access to all local laws and elected officials, and should be contacted for information on the legal requirements in each particular town.

Villages lie within the limits of towns. They can be thought of as miniature cities. They may in fact grow to a point where the size of their population makes them cities. Village authority usually encompasses fire, water, sewer, police, and highway responsibilities. Government officials usually include a mayor, a board of trustees, and a village clerk. Again, the village clerk is the person to contact for information about the requirements of the village. Villages also have the power to control zoning, nuisance, and health within their boundaries.

The Town Clerk or Village Clerk should be contacted for information on all local laws and elected officials as well as the legal requirements that land application must satisfy.

Figure 1 is a political map of Tompkins County, New York. This map gives an idea of how various sectors of local government are related to each other geographically.

Special districts are often set up to provide a single, specific service to a community. Usually, this service is something major, like fire protection or sewage treatment, which single towns or villages cannot afford. School districts are also considered special districts. Except in the case of school districts, the service provided by the special district is paid for only by the recipients of that service.

In some cases, land treatment systems may be set up for special districts, just as conventional treatment plants are. The advantage to a special district is that it is administered by a panel of experts, and the administration is centralized.

Instead of serving a village, town or other pre-existing jurisdiction, a land treatment system may serve a special district and be administered by a panel of experts.

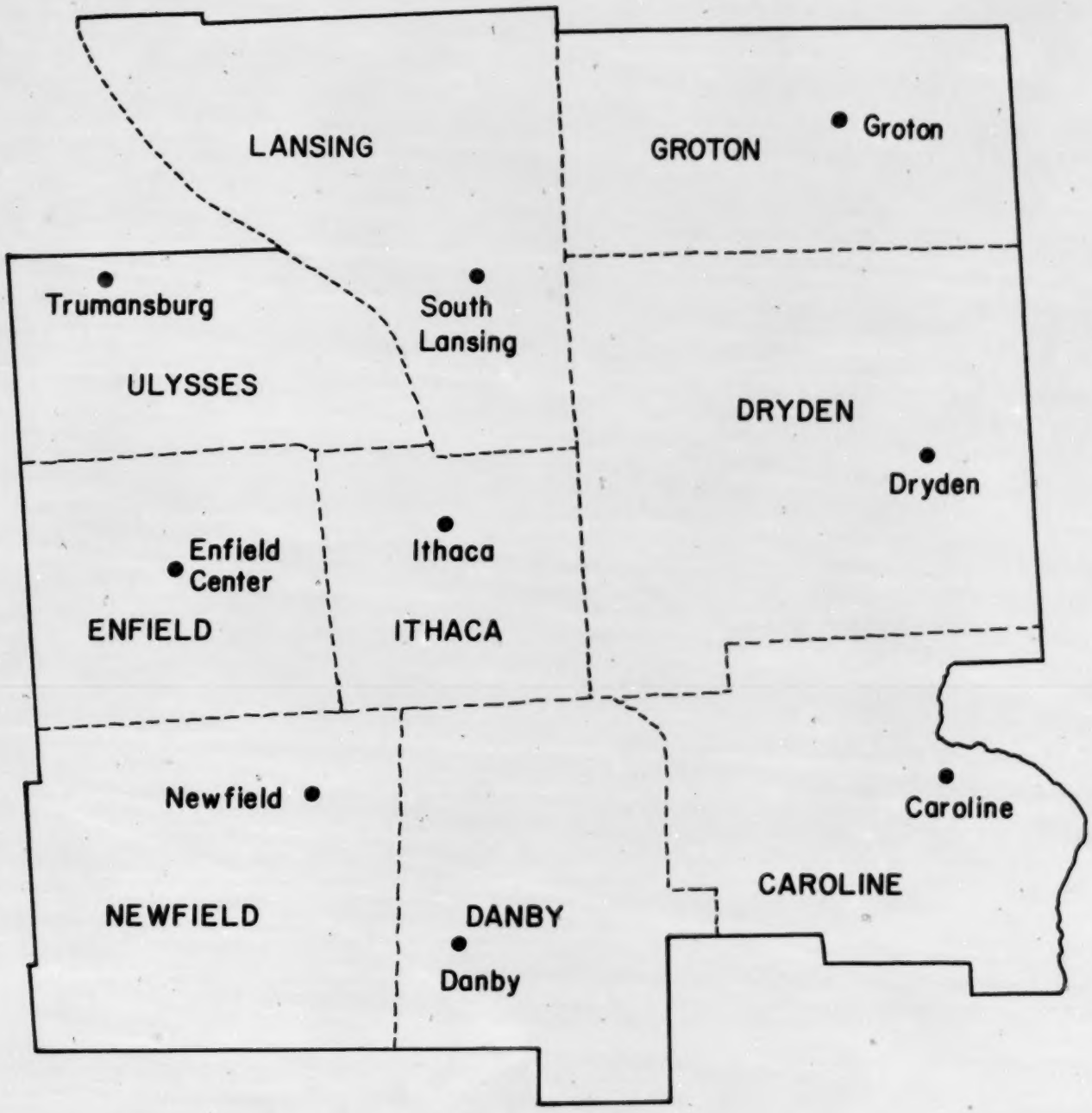

FIGURE 1. Political map of Tompkins County, New York, showing town lines and location of major cities and villages.

Local Ordinances Affect Design

A design group must keep in mind local ordinances and other regulations when planning for the installation of a land treatment system. The focus is on how local governments control land use. In order to carry out its functions, governments are given various powers. One of the powers of the local government is to plan for the future of the community. The device most commonly used to implement this power is zoning. Although many people tend to think of planning and zoning as the same, they clearly are not. Planning is a means of controlling how land within the local government unit - be it village, town, or county - will be used. Planning implies a well considered scheme for development in the area. Zoning is the method used to control development in the area so as to conform with the plan.

Planning controls how land will be used in a locality; zoning is used to control development so as to conform with the plan.

Why is it necessary for planners of land treatment systems to be familiar with the local regulations and zoning codes? A community which has thought about its future development usually has developed a master plan. A master plan is drawn up to form a picture of a community's future physical pattern. Control measures are then recommended to move the community in the direction of that pattern.

In the case of a land treatment system, the master plan can play an important role. Depending on the type of system, it may provide the municipality with the open space, parkland or lake that the master plan has envisioned. Module 13, "Non-Crop and Forest Systems" discusses the alternate ways the land involved in treatment systems may be used for recreation, reclamation, and wildlife habitat. A decision must be made about which are compatible with the master plan. These sites must, of course, also be suitable for land treatment in terms of their soils, drainage and other pertinent characteristics as covered in other modules of the program.

If it is a municipal wastewater system, the design group will be working right along with the local planning board to decide on the best site for the system. Planning boards are set up in towns, villages and counties in accordance with several state statutes. The function of the planning board is to report, investigate, advise, recommend, monitor performance, offer suggestions, and coordinate all activities in the municipality which will affect that municipality's development. The planning board has no real power - it is only an advisory body. Planning is enforced by the zoning officer.

The land application design engineer must work closely with the planning board, an advisory body, which is involved with all activities affecting local development.

Planning boards are usually made up of lay people. Planning is not restricted to regulation of development, but also attempts to create a whole community that is desirable, as well as being legally and technically correct in its use of land. Planning proceeds within the framework of laws, the relationship with the local government, the primary concern with the physical development of the community, and community goals and objectives.

Planning boards are usually composed of local lay persons except in large cities where professional planners are on the staff.

Planning is a local concern, and should, therefore, involve local people. Large cities usually have professional planners on their staffs, but in most small municipalities the planning board will not be staffed by professional persons.

Zoning is Main Method of Control

Once the master plan has been created, development can be controlled in several ways to conform to that plan. Zoning is the method most commonly used. Zoning divides a municipality into areas for different uses. It establishes regulations to govern land use within each of these areas, or zones. Zoning can channel different kinds of growth into the appropriate area. This leads to preservation of valuable areas for uses such as housing, recreation, and open space, and sets aside less desirable areas for

Zoning divides a municipality into areas for different uses and regulates land use in each zone.

industrial and commercial usage. Different municipalities may interpret land application of wastes as different uses of the land. One town might consider land application as agricultural in nature, if crops are grown on it. Another town might consider it industrial, if it is used to treat industrial waste - even if crops are grown on it. Different zones are taxed at different rates; therefore, the manager of the treatment system would be most interested in how the land on which the system is to be installed will be zoned.

Because different zones are taxed at different rates, designers of land application sites must seek out a low tax zone, usually an agricultural zone.

Because zoning is the most common way to control land use, it will be discussed in greater depth. The zoning officer enforces zoning laws through the issue of occupancy permits and building permits. Building permits are of greater concern to those planning to install a land treatment system, since building permits apply to nearly all types of construction, including pipelines, housings for irrigation controls, and so on.

The zoning officer can only decide whether a project does or does not comply with the zoning laws, and therefore, whether or not a building permit can be issued. If the project does not comply with zoning law, it must either be altered so as to comply, or appeal must be made to the Zoning Board of Appeals (ZBA). The ZBA has the power to 1) correct any errors found in the zoning law, 2) grant a "variance" to the law, or 3) issue a "special permit" for the project. A variance may be a "use variance" or an "area variance", depending on the nature of the appeal. Table 1 summarizes units of local government that exercise authority over land use.

If a land application project doesn't comply with zoning law, the project engineer can either alter it to comply or appeal to the Zoning Board of Appeals.

In order to illustrate how local governments function and regulate development within their boundaries, examine this imaginary situation;

The Town of Newland is having problems with its secondary treatment plant. The Town has expanded in recent years, and the state in which it is located

TABLE 1

LOCAL POLITICAL BODIES RELEVANT TO LAND APPLICATION

Town Board, Village Board or City Council - a law-making body which passes zoning ordinances that govern land use.

Planning Board - an advisory body with no real enforcement power usually made up of lay persons except in large cities where it is staffed by professional planners. The Planning Board reports, investigates, advises, recommends, monitors performance, offers suggestions, and coordinates all activities in the municipality's development. The Planning Board may create a master plan that describes the community's future development. The purpose of the Planning Board is to make a community that is desirable to live in.

Zoning Officer - the person who enforces the desires of the Planning Board. The zoning officer can decide whether or not a project complies with the zoning laws and therefore whether or not a building permit will be issued. The zoning officer enforces zoning ordinances through the issuance of building permits or occupancy permits.

Zoning Board of Appeals - the decision-making body which has the power to 1) correct any errors found in the zoning law, 2) grant a variance to the law, 3) issue a special permit for the project. A variance may be a use variance or an area variance depending on the nature of the appeal.

has just passed stringent water quality standards. The secondary sewage treatment plant can no longer handle the increased waste load and still produce an effluent of sufficiently high quality to meet state standards.

The imaginary town of Newland illustrates how a municipality chose land treatment to solve the problem of an inadequate sewage treatment plant.

The Town Board was elected because they promised not to increase the taxes within the town. However, they must do something to make their treatment plant satisfy the state water quality requirements. How will Newland deal with its sewage problem? In examining the Newland case, note the various roles that are active throughout the planning process, and how parts of the local government and the community play a part in the decision-making process.

Town of Newland Illustrates Local Government Functioning

The case is adapted from a section of Planning Boards and Zoning Boards of Appeal, by D. Wilcox, A. Taverni, and C. Hamlin (1975). It illustrates how a well-organized effort by local government officials can help overcome public opposition to land treatment systems. Although based on the experiences of many municipalities dealing with similar problems, it is imaginary and it should be used only as an example, not as a reference.

A well-organized effort by local government officials can help overcome public opposition to land treatment.

THE NEWLAND TOWN LAND TREATMENT SYSTEM

Newland Citizens Voice Complaints

For some time a number of persons and groups in the Town of Newland voiced complaints and concern about the sewage treatment plant. Those living in its immediate vicinity griped about the odors and flies. The local chapter of Citizens for Environmental Protection (CEP) picked up the long-time complaint of the Fisherman's Club that inadequately treated effluent from the plant polluted a nearby stream.

The increase in population over the last few years raised concern among some that the plant would not be adequate within a few years.

The final straw, however, was the State Highway Department's rerouting of the major highway through the area in such a way that it became impossible to conceal the plant from highway motorists. Citing the disastrous image of Newland that would affect the summer tourist trade, the Chamber of Commerce got most of the dissatisfied persons and groups together to draw up a petition asking the Town Board to do something about the treatment plant.

Newland citizens complained about odor and stream pollution from the existing conventional treatment plant. They said it was an eyesore and would decrease the summer tourist trade.

The Newland Town Board was both relieved and uneasy upon receiving the petition. Privately, its members had already recognized their responsibility to correct the situation. But they were familiar with the controversy which ensued in the neighboring Town of Colfax when they took on their sewage problem. This made the Newland officials hesitant to act. After a brief discussion with the parties headed by the Chamber of Commerce, the Town Board referred the matter to the Newland Town Planning Board for study and recommendations.

At the suggestion of the Newland Town Supervisor, the Planning Board Chairman first arranged to discuss the Colfax experience with two members of the Colfax Town Board. He learned that there had been no widespread public interest or concern until the Colfax Town Board identified three or four general areas where it might locate a land treatment system. Then many individuals and groups came forward from those areas claiming that the Town Board had denied them a say in the matter and were trying to "force a land treatment system down their throat." These citizens succeeded in redefining the issue in such terms that the project was nearly defeated. The town even had to defend itself in court in a suit brought by the opposition.

A town near Newland had nearly defeated a land treatment proposal because selection of a site became an emotional issue, arousing citizen opposition.

Seeks Public Input from Beginning

After hearing a report on the Colfax experience from their Chairman, the members of the Newland Town Planning Board decided that they should seek public involvement in their actions from the very beginning. But how should they do it? The first thing they decided to do was to make a concerted effort to get all those persons and groups who might be interested in the problem to come to a public meeting to discuss it. This would not only get the public involved from the beginning, but would also give the Planning Board a "better feel" for the problem and what different people felt might be done. In addition to those who had presented the petition to the Town Board, the Planning Board directly contacted the Rotary Club, the League of Women Voters, the non-partisan political lobby, the taxpayers association, and a number of other groups, asking them to send representatives and to spread the word among their members. They also placed a notice of the meeting in the area events column of The Newland Herald and on the "Town Crier" program of the local radio station.

Newland decided to involve local citizens from the very beginning and called for a public meeting to discuss waste treatment alternatives.

About twenty individuals attended the meeting speaking for themselves or as group representatives. The Planning Board first encouraged everyone to voice dissatisfactions with the current situation. With these complaints in mind, the Planning Board Chairman and another board member wrote down a brief list of objectives. Those persons present accepted these objectives with some minor modifications, and agreed to pursue them to resolve the sewage treatment problem. But no one at the meeting seemed to be well informed on alternative solutions. The Planning Board Chairman finally suggested that they invite some "experts" to a later meeting to help them identify and analyze alternatives. With the group's approval, the Planning Board decided to invite a representative from the

Newland planning board chairman incorporated public complaints and desires into the list of objectives for waste treatment.

State Environmental Protection Agency (SEPA) and the County Health Commissioner. The group also accepted the suggestion of the local CEP environmental group members that they invite their State Education Director.

Experts are invited to attend the next public meeting. They include representatives from the state environmental regulatory agency, the County Health Commission, and the state president of Citizens for Environmental Protection.

Many Interest Groups Attend Meeting

When arrangements were completed for the next meeting, the Planning Board publicized it and invited public participation. This meeting was also well attended, but the audience was not exactly the same as the first one. Some of those at the first meeting, such as the Fisherman's Club, apparently got their complaints "off their chests" and were content to let others work out a solution. Some groups sent spokesmen whom they had chosen to provide their input and keep them informed of developments. New people showed up. The Newland Taxpayers Association, for example, had decided that the upshot of the meetings might mean spending public monies. They came to try to exercise an early veto on any extravagant proposals. The SEPA representative told the local residents that it was still legal to create a larger sewage treatment plant. But the CEP environmental group's Education Director called this a medieval approach to the problem. The County Health Commissioner downplayed it because, he said, there were just no inexpensive solutions to the health hazards created by sewage. The SEPA representative said there was no state aid available for the creation of larger plants unless all other alternatives are ruled out.

What were the alternatives? "Advanced waste treatment, sometimes called tertiary treatment, or land treatment," the SEPA spokesman said. The environmental group members latched onto the advanced waste treatment idea and asked how such a plant works. But after the SEPA man and the environmental group Education Director explained the process, the taxpayers

group asked, "What about costs?"

The SEPA representative said that to his knowledge no municipality with a population as small as that of Newland had ever decided it was financially feasible. When he quoted costs, it raised numerous eyebrows. Not yet deterred, the environmental group asked their Education Director's opinion. Unfortunately, he said, he had to concur; without even knowing Newland very well, he could confidently predict that a push for a tertiary treatment plant was doomed by the expense involved.

Land Treatment Emerges as Alternative

The only alternative was land treatment. The SEPA representative said several municipalities the size of Newland had found land treatment systems financially feasible and satisfactory for sewage treatment. Moreover, federal aid was available, provided that certain conditions were met. The environmental group's state Education Director said that all things considered, a land treatment system was probably the best alternative. The County Health Commissioner noted that a properly designed and operated land treatment system would eliminate many and perhaps all of the health problems caused by the inadequate secondary plant.

Experts explained that tertiary treatment would be too expensive and they agreed that land treatment was the only alternative for Newland.

With approving nods from other board members, the Planning Board Chairman said: "The consensus seems to be that we should consider creating a land treatment system."

The Planning Board reported its findings in writing and orally to the Town Board. The Town Board asked the Planning Board to:

-develop plans for a town land treatment system in accordance with federal funding requirements;

-identify possible sites for a land treatment system and to recommend one;

-further investigate what secondary management scheme the town might undertake;

-work in close collaboration with the appropriate town officials in undertaking these tasks.

Two members of the Planning Board volunteered to work with the local environmental group on possible management alternatives for the land treatment system. They created schemes to provide a much sought-after recreational park with playing fields, and maybe even a lake for boating.

Newland Planning Board worked with the local environmental group on how the site would be managed.

Concerning land treatment, the Planning Board first recognized that to fulfill its responsibilities it had to collect and digest a wealth of information on federal and state laws, regulations, and funding requirements for the proper design of a land treatment system, operating policies, what constituted a proper site, and so on. The board quickly agreed that they would have to work with a consulting engineering firm, the municipal attorney, the state EPA, the Town Highway Superintendent, the new part-time Town Engineer, the Soil Conservation Service, the County Health Department, and other knowledgeable parties. This could be done either through informal private contacts or at board meetings, depending on the problem and its importance.

Newland's Planning Board first began to work on satisfying federal requirements for land treatment and made contacts with technical, governmental and legal experts.

Board Questions How to Deal with Public

The board had more trouble deciding how to deal with the public. Past experience had proven that public involvement could often improve final proposals. They felt this involvement was not only desirable, but necessary for acceptance of the land treatment system. This was obviously demonstrated by the bad experience in Colfax and many other local governments. Those citizens who had attended the early meetings had learned something about land treatment systems. The board recognized, however, that these people constituted only a minute fraction of the town's

To avoid a bad public reaction to land treatment, the Newland Planning Board began an extensive public information program.

population and a small proportion of its well-informed citizenry. Experience in other jurisdictions indicated that the dominant attitude the board would encounter would be: "A what? Oh, a land treatment system. That's a euphemism for a sewage farm, right? Okay, maybe we do need a new treatment plant, but not in my neighborhood!"

What was needed, the Planning Board decided, was an extensive effort to inform people about land treatment systems, to keep them informed of the actions being taken to create one, and to invite them to participate as much as they wished. The board drew up a long list of Newland area organizations to contact. One member proposed that they tell these organizations that the Planning Board was available to speak about the treatment problem and the efforts to create the land treatment system. But another board member commented - and others agreed - that they could wait forever to be invited to speak about sewage. Therefore, each board member agreed to contact a number of the listed organizations and to ask if he could speak to them in the spirit of civic-mindedness. To keep these organizations up-to-date, the board agreed to create The Waste Paper, a brief monthly newsletter dealing with the town's progress on the land treatment system. It would be mailed to the leaders of every group contacted by the Planning Board and to anyone who wanted to receive it. The board agreed that the chairman should contact the editor of The Newland Herald and the local radio station to see if they would help in some way.

Each Planning Board member gave speeches about land treatment before several interest groups and organizations; it published a newsletter about the proposed land treatment and contacted the local media for publicity.

Officials Give Informative Speech

Over the months that followed, the board members spoke to a large number of organizations. They gradually learned that if they could somehow tie the topic of a land treatment system to the particular concerns of the group they were addressing, surprisingly,

the topic evoked considerable interest and discussion. Neighborhood associations and women's groups, for instance, usually got more interested when the speaker said cleaning up the present treatment plant site would spruce up the image of the whole area and a properly laid out and operated land treatment system should not be a detriment to anyone's neighborhood.

Some valuable ideas surfaced from the public speaking. In fact, the idea of cleaning up the old treatment plant was one of these. After bringing the Chamber of Commerce up-to-date on the land treatment project at one of its meetings, a planning board member got this comment:

Valuable ideas emerged from the citizen feedback at public speaking events.

> I'm very pleased to see you moving forward on this project, but the Chamber of Commerce's original interest - which was just to modify the impression motorists get of the Newland area from Route 76-seems to have gotten lost somehow. I didn't hear you say anything about cleaning up the old treatment plant.

Thereafter, the Planning Board added this to its concerns and, with the help of the Town Engineer and the Town Superintendent of Highways, came up with a plan for making the old plant site less obtrusive.

Officials Make Use of Local Media

The Planning Board's other publicity worked well, too. Every well-informed citizen of Newland came to know what The Waste Paper was. With the help of the Planning Board and the Town Board, the Newland Herald ran three special articles on alternative ways of dealing with sewage, the town's efforts to create a land treatment system, and the experience with this alternative in other communities around the state. The Herald and the radio station covered the Planning Board's actions on the matter on a regular basis. The radio station twice invited the Planning Board Chairman to discuss the land treatment system

The Newland local newspaper published articles about land treatment and the radio station put the Planning Board chairman on the air to answer questions phoned in by listeners.

project from the "hot seat", as it was termed, on their weekly telephone question-and-answer program.

Board Delays Choice of Particular Site

While the publicity efforts were going on, the board also had to face the "nitty-gritty" questions of creating and operating the land treatment system. For a while, the Planning Board deliberately avoided dealing with the nitty-gritty. Its rationale was that it didn't want to act and bring the situation to the "sticky issue" - choosing a particular site - before its publicity efforts had sufficient time to prepare people to face this question.

When the board did decide the time was right to start acting, they used a variety of means to announce their public meetings and invite the public to participate: the local paper, the radio station, The Waste Paper, and direct contacts with people or groups who might have a special interest in the particular aspect of the land treatment system on the agenda. Certain groups were always represented at these meetings and other local residents showed up on an irregular basis. As long as attendance was not too large, the board proceeded as informally as possible to encourage non-board members to join the discussion, only resorting to formal procedure to keep the discussion on track and to register decisions by the board.

But as the result of conscious decision, the board postponed discussing a particular site for the land treatment system until practically all other matters had been investigated and recommendations had been decided. Board members not only wanted to continue to give the publicity campaign a chance, but they felt that investigating the other aspects of the question first would help them to defend their choices of possible sites and a particular site. To all questions of "Where is it going to be?"

The Newland Planning Board intentionally postponed the choice of potential sites for land application, until other decisions were made. They wanted the public to be familiar with land treatment before this most controversial subject was broached.

board members answered quite honestly that they had not faced that question yet and in fact did not yet know enough to face it.

When they felt the time was right, the board arranged for a public meeting to be attended by the consulting engineer, the Town Superintendent of Highways, the Town Engineer, a representative of the County Soil Conservation Service, the County Health Commissioner, and the Town Supervisor. The board announced the meeting in the usual fashion and made it clear that its basic purpose was to delineate some general areas where the land treatment system might be located.

Newland's Planning Board invited technical experts and local and county officials to speak at the public meeting on site selection.

Meeting on Land Site Choice Draws Crowd

This meeting came close to packing the town hall. The Planning Board Chairman opened the meeting by briefly reviewing what planning board members had been saying for months to numerous groups:

-why the town had initiated efforts to create a land treatment system,

-what a land treatment system is,

-what will be done to prevent it from being a detriment to a neighborhood,

-what has been decided to date

The Planning Board then asked each of its invited guests to speak, and collectively they identified the limitations imposed in the form of costs of transporting wastes, the town highways, rivers and streams, soils, concentrations of population, land cost, and so forth.

After a break, it was only a short time before the assembled representatives had identified the only three areas in the town in which it was really feasible to consider locating the land treatment

system. Of course, the Planning Board members, over the months they had dealt with the problem, had privately developed their own ideas on possible general locations. As a result, they had made special efforts to speak to groups of local residents in those areas and had, in fact, hit all three areas selected. Still the Planning Board could see obvious relief on the faces of residents of areas that had been ruled out and equally obvious concern on the faces of many residents of the selected areas.

Newland's Planning Board had already spoken with persons who resided in the potential site areas.

The board was ready for this. The Chairman announced that the Planning Board wanted to hold special meetings with the residents of each of the three areas to further inform them about the land treatment plans and to give them a chance to have their say at a smaller meeting. They could talk more now than at the required public hearings to be held at a later date. He asked the residents of the three areas to withhold their questions and comments until these meetings. The board then asked two of its members as well as the consulting engineer, the Town Engineer, the Highway Superintendent, and the Town Supervisor to form a special Site Committee to identify possible sites within the three general areas.

The meetings in the three areas were held in two community association buildings and at the home of a local Grange leader. The Planning Board Chairman, another board member, the Town Supervisor, and either the Town Engineer or the Superintendent of Highways attended all three meetings.

Publicity and Self-Education Pay Off

The publicity and the self-education the planning board members had acquired paid off on these occasions. The community leaders in all three areas demonstrated knowledge of the issues involved and sometimes helped allay the worries of the uninformed. The town officials, especially the Planning Board members, found they

could field most questions easily. Not everyone was satisfied, but the town officials felt they had succeeded in convincing most of the residents in all three areas that the land treatment system was necessary and that while they might prefer it be located elsewhere, they could live with it. It was particularly convincing when the Highway Superintendent pointed out that the roads leading to the land treatment system would have to be kept in very good condition. Depending on the particular site, he said some reconstruction might even be in order. The area that got the land treatment system would also be given a high priority for road maintenance.

After two months of intermittent effort, the consulting engineer and the Site Committee identified two possible sites within two of the general areas previously chosen. The sites were announced in a press release and in a special edition of the Waste Paper. At the same time, the Planning Board announced the date of the required public hearing. As that date approached, the board went through its now customary publicity procedures. In addition, since the Planning Board Chairman had gotten all those who had attended the community meetings in the areas to sign attendance sheets, the board sent special notices of the meeting to them.

A public hearing was held after the site selection had been narrowed down to two sites.

Public attendance at this meeting was limited largely to those people who had followed the project from its beginning - such as the local environmental group people and the taxpayers group - and to residents of the two areas where possible sites had been identified. After the board and its Site Committee had identified the pros and cons of each site, the meeting was thrown open for public comment. It soon became clear that there were unconvinced people from both areas, but their opposition seemed to be tempered by a realization that they were minorities. Most of the

local residents seemed to be there to assure themselves that plans had not been changed in any significant way and that their suggestions had been considered.

Nearby Residents Oppose Site Selection

The people who spoke out against the project were almost entirely those whose residences were immediately adjacent to the two sites. One of them finally said that he had read in The Newland Herald that public parks had sometimes been constructed on land treatment systems. If there was any possibility that the town might eventually do such a thing, he said, it would make having "that thing" across from him more palatable. The Planning Board Chairman noted that this was a possibility, since the town did need more parks and it would certainly want to put any land it owned to an appropriate use. After that even the opposition of the immediate neighbors of the two possible sites seemed to diminish.

Opposition to the two sites was limited to persons who owned adjacent property. Their objection diminished when the Planning Board suggested the possibility of creating a park at the site.

The Planning Board members then discussed among themselves the two sites for a short time. Finally, the board brought the matter to a vote and decided to recommend one site over the other to the Town Board. There was no cry of outrage at the decision. The Board directed its Secretary to prepare a detailed record of the hearing and the Planning Board's findings and to file them with the Town Board.

The Town Board considered the issue shortly thereafter. Visible public opposition had virtually evaporated at that point, allowing the Town Board to carefully consider the technical aspects of the two sites. After reviewing the record of the public hearing and discussing the matter with the members of the Planning Board present, the matter was brought to a vote. The Town Board found the site the Planning Board had not favored more appropriate.

Local Government Wields Power

We have seen that local government has a great deal of power in regulating land treatment systems. Local ordinances, based on a master plan and enforced through zoning, regulate where a land treatment system may be installed, and how it will be taxed. The system must be located so it doesn't adversely affect the present community, nor its expected future development.

Local government regulates where land treatment will be installed and how it will be taxed.

If a land treatment system site is in conflict with the planned use of that area, a variance may be obtained, if it can be shown that the system will not conflict with the planned use of that area. Depending on the municipality where a treatment site may be chosen, different approaches to the planning problem may be encountered. Some communities may have already adopted a master plan, and are prepared to adhere to the decisions that it represents. We may term this the "Don't you dare" approach. Here, the community has created a process whereby change is managed in the best interests of the community.

Communities which have master plans and are determined to stick by them follow the "Don't You Dare" approach.

The opposite of this approach may be termed the "laissez-faire" route. A community which has chosen this approach to planning allows changes to occur, and deals with problems as they arise. For example, the ABC Foods Company decides to install a food processing plant in Dudsville. The town fathers are happy to see industry come to Dudsville; the plant will give jobs to the citizenry and will create a market for local produce. The fact that ABC had decided to treat its wastes with a land treatment system does not deter the town board. However, two months after the plant and waste treatment system are in operation, it becomes evident that:

Communities which have no plans and deal with problems only as they arise practice the "laissez-faire" approach.

- runoff from the improperly designed spray irrigation field is polluting the stream Dudsville uses as a water supply;

-the town has to resurface the roads leading to the ABC plant because the heavy equipment used at the operation has ruined the old road;

-the mayor's home is directly downwind of the spray field, and he has decided to pack up and leave because the odor is so bad.

Of course this imaginary situation represents the worst possible combination - a town which has no planning, and an industry which does not care what effect their operation has on anyone, so long as the profit remains high. The imaginary town must 1) install a water purification plant; 2) install new roads; and 3) find a new mayor. Dealing with the problems caused by growth and development as they arise may create some costly problems further down the road.

There are, of course, towns which will have a middle-of-the-road approach to planning. This approach calls for dealing with as many problems as possible in advance. Those which have not been solved in advance will be solved when they arise. These towns would deal with ABC Foods by presenting them with a map of the town, showing the water supply, hard roads, and other pertinent information. They would expect the company to plan their facility so as to create as few problems as possible. However, because their preparation was not quite thorough enough, they may still have to deal with one or another of the problems created by the new plant and its treatment system.

Some communities try to deal with most problems in advance through planning but deal with unanticipated problems as they arise.

The town of Don't You Dare which we looked at first would not have to deal with any of the problems created by the industry, because either they would have solved all the problems prior to the installation of the plant and its treatment system, or if the industry were unwilling to comply with the master plan, then the town would not allow the industry to move into the area.

It is true in all three cases that the local government must be approached prior to installation of land treatment systems. It is necessary to identify pertinent local ordinances which may affect land treatment systems. It must be determined how such an installation will affect the community both in the present, and in terms of its future development. In many cases a land treatment system will be a boon to the community, both in terms of its efficiency and cost-effectiveness as a waste-treatment alternative on the proper site, and in terms of secondary management schemes which may provide needed recreation areas or other types of open space which make the community a more desirable one in which to live.

Communities will deal with land application of wastes differently depending on the degree of planning they have established.

Land application can be a boon to a community. Efficient and cost-effective, it can double as an open space, a green area, or even a playing field for recreation.

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Appendix

Case History - Food Industry Land Application Proposal

The case of Clark Foods vegetable canning plant illustrates the importance of involving community officials in plans for land treatment from the outset and keeping lines of communication open throughout the site selection and preparation. It also underlines the importance of answering questions from interested citizens as they arise. All representatives of the industry concerned must be aware of this open communication policy because if any individual holds back information, suspicion may be aroused.

Clark's is located in the Town of Garth, New York. Begun in 1966, the plant processes wax beans, green beans, and baked brown beans. Cabbage is fermented and canned as sauerkraut. Clark's employs over 300 seasonal workers from July to November and 80 year-round employees, with an annual payroll of $1.24 million. Clark's is a major buyer of vegetables from local farmers in Sioux County, an agricultural area with 3 out of every 10 jobs related to agriculture. Sioux County ranks first in the nation in the production of sauerkraut; 10,000 tons of raw cabbage were processed at the Clark's plant in 1975.

In the mid-1970's, Clark's found that its existing disposal method for washwaters from vegetable processing was inadequate. Its 45-acre spray irrigation field adjoining the factory did not provide sufficient land area to handle the daily flows during peak canning season and considerable amounts of wastewater were lagooned, leading to complaints from surrounding homeowners of odor, especially from sauerkraut brine. In December 1975, Clark's applied to the New York Department of Environmental Conservation for a permit to process wastewaters via a spray irrigation system of 226 acres in the Towns of Paris, Shawnee, and Garth, all in Sioux County. All three towns are rural:

	Population	Size
Town of Garth	2780	20.5 sq mi
Town of Shawnee	2810	48.5 sq mi
Town of Paris	6330	65.7 sq mi

Clark's began to take options on land in the proposed spray irrigation area in the mid-1970's. As early as the spring of 1975 the Town of Garth asked Clark's for its preliminary plans for disposing of wastewaters. Residents of the Town of Paris were curious about the large tracts of land that Clark's showed an interest in and brought the matter to the Town Planning Board. According to town officials in Garth and Paris, Clark's attitude at this time was cordial but close-mouthed.

It was not until July 24, 1975, that Clark's held a formal meeting with town officials of Paris, Garth, and Shawnee concerning the proposed spray irrigation area. A member of the planning board in Paris told the assembled group that Clark's had options on 465 acres of land. Representing Clark's at the meeting were the vice president of corporate production and engineering, the operations manager of the canned foods division, the compary's director of engineering, and a Clark's soil specialist. Also present for Clark's were two engineering consultants from the firm Clark's had hired to design their spray irrigation system.

Town officials drew up a list of questions which the Clark's representatives answered. These included questions on the amount of acreage to be used, how much land to be used in each town, past method of waste disposal, nature of effluent to be sprayed, environmental impact on the land, control of water, type of cover crop, etc. Clark's representatives assured the town officials that there would be no sauerkraut juice sprayed on the land, that the land would be cropped and would not become swampy, and that lagoons would not be used except for storage during heavy rains, heavy production, or wintertime.

The representatives of Clark's said they would dispose of 750,000 gallons per day and that there would be no ponding of water, no pollution of above or underground water, and no runoff. The site would be planted with reed canary grass and harvested three to four times a year. They stressed that Clark's had attained satisfaction through similar facilities in other towns. Company officials said they would make a reasonable agreement with the three towns concerning the limits of the spray irrigation system, but they would not sign any agreement that would control or regulate their future. They also said the plant might be enlarged to process and can beets as well as increase green bean volume by 50%.

Although this early informational meeting was attended by 5 persons from Shawnee, 7 from Garth, and 11 from Paris as well as 6 high-ranking representatives from Clark's, several town officials described Clark's early attitude as close-mouthed. The Clark's representatives invited questions; they gave an informational talk, and showed slides of other spray irrigation projects, including methods of control and monitoring. According to Dick Johnson, chairman of the planning board in the Town of Garth, Clark's never sat down with Garth officials and laid out their preliminary plans for the spray irrigation project. Johnson was bitter and opposed to the project.

"Clark's has done it all wrong," Johnson said. "When anyone else--anyone as big as Clark's or anyone with common sense--has a building plan, they always approach the town first, the zoning officials and the planning board, with an informal plan of the site and what they have in mind. The state won't give approval until there is a preliminary approval from the local planning board.

"Two years ago we asked them to explain their plans to us; if you want a wastewater system, talk to us about it. But they wanted Department of Environmental Conservation approval first. They figured that if they got that and other state approval, they would try to make us swallow the plan locally without any preliminary knowledge.

"I've been going to their meetings for two years. Clark's should have sat down with us and said at the very beginning, 'What do you think of this? What are your zoning laws? Here are our plans and what do you think?'"

Guy Tindall, attorney for the Town of Paris, had similar observations. "From the very beginning, it was difficult to get specifics out of Clark's. When they first began to buy up large tracts of land in the Town of Paris, surrounding landowners began to get concerned and asked town officials about it. At that time we didn't know Clark's plans and we assured the townspeople that they would need a special building permit or use permit in order to go ahead with any plans. But Clark's did not inform us of their plans at this early stage.

"In March 1977, Clark's went before the Town of Paris Zoning Board to get approval of their spray irrigation plan. Their attitude was 'Since our spray irrigation project doesn't violate your zoning ordinances, we don't need to worry. We didn't need to contact you earlier.'"

From the comments of these two town officials, it appears that Clark's did not make an effort to meet with officials of each town at the earliest possible date, to ask them for their suggestions and to assure them that Clark's would comply with their zoning ordinances. Both town officials received the same impression: that Clark's was more concerned with state approval and that once that was received, Clark's felt confident that local approval would follow automatically.

Reactions to the spray irrigation project varied with each of the three towns. Ironically, it was the Town of Paris, in which 90% of the spray irrigation site was to be located, that benefited least from Clark's contributions to the local economy. Farmers in the Town of Shawnee depended on Clark's to buy their snap beans. Residents of the Town of Garth received taxes and employment from the Clark's plant. But in Paris, Clark's was not a major buyer of produce, and the town received no taxes from the plant.

From the very beginning the Town of Shawnee welcomed the project because of the town's economic dependence on Clark's and because the portion of the proposed spray irrigation site that was located in Shawnee was to be used only as a buffer zone. The Town of Garth received taxes and employment from Clark's, but the proposed spray irrigation site bordered a residential area in Garth where Dick Johnson, the chairman of the Planning Board, lived. Coincidentally, the chairman of the Paris Planning Board lived continguous to the western boundary of the proposed spray irrigation site. This Paris official, Wilmer Wood, was a leader in the Civil Liberties Association Against the Dumping of Industrial Wastes on Agricultural Lands, a group of eight landowners who opposed the spray irrigation project.

What were the objections of the Civil Liberties Association Against the Dumping of Industrial Wastes on Agricultural Land?

-- that the washwaters from beans and cabbage to be sprayed on land were industrial in nature and not agricultural. Therefore, Clark's had to seek a zoning use variance from agricultural to industrial. "We all know that Clark's is not in the business of growing grass for cows; Clark's is in the business of canning and selling food for people," a spokesman for the Civil Liberties group said.

-- that surrounding property will diminish in value.
-- that the soil of the site does not have sufficient permeability to accept 750,000 gallons of water a day.
-- that the project will pollute wells and cause nuisance odors.
-- that Clark's has not demonstrated that the operation will not "greatly adversely affect the environment of the area".
-- that the large volumes of water will flood neighboring farmland and disrupt the existing tile drains in the immediate area.
-- that the spray irrigation site constitutes a private dumping site, not allowed under the Town of Paris zoning ordinances.

Both the Towns of Paris and Garth overruled the objections of the Civil Liberties Association against Dumping on these grounds:

-- that Clark's growing of crops in an ordinary farm-like manner, including irrigation of these crops with cabbage wash water and wax and green bean wash water, is an agricultural use. Even though the express purpose of the farming operation is to dispose of wastewater, it is not within the zoning ordinance to question why someone is farming--it may be for profit, it may be for pleasure, the reason is irrelevant.
-- in accepting Clark's plan, the chairman of the Garth Zoning Board of Appeals said: "I think a big factor in ruling for Clark's was that the system was approved by the Department of Environmental Conservation and that it is an accepted system by many canneries throughout the country. . . I can't see any difference between washing beans in your sink and running the washwater into your sewer. To call this industrial wastes is overplaying the word industrial."

What were other objections that arose during the several public hearings on the proposed spray irrigation project?

-- that the project would pollute water, land and air resources.
-- that Clark's existing spray irrigation plant adjoining their factory produced foul odors and deleterious environmental affects.
-- that the project would harm an adjoining cemetery destroying its physical appearance and causing odors. The collection of surface water might cause the coffins to float due to high groundwater elevation.

-- that the project would cause nuisance noise in the area.
-- that in 20 to 25 years the area will be a swamp.
-- that the project is a potential health hazard.
-- that the project will adversely affect an adjoining property owner's family, livelihood, property, wildlife refuge and farm operations.

Although the project was tied up by local zoning boards for more than a year, postponing its summer 1977 start-up date to summer 1978, there were many supporters of the spray irrigation project in all three towns. The primary support groups were the local chambers of commerce, the Farm Bureau, Garth Growth, Inc., C. D. Hoover Farms, Inc., Strong's Nursery, Inc., Farm-It Farms, Inc., individual farmers, and employees of Clark's. The president of the Sioux County Farm Bureau read a prepared statement at public hearings in both the Town of Garth and Town of Paris emphasizing Sioux County's dependence on agriculture in general and on Clark's as a major buyer in particular. "The members of this board have an opportunity, a critical opportunity to assure the continuation of a strong agriculture," she concluded.

Why did Clark's have such difficulties with its 226-acre spray irrigation system? Obviously, the proposal was complicated by the property spanning three towns, tripling the number of approvals needed. Municipalities in New York State have stricter zoning ordinances than in other states, being influenced by highly sophisticated zoning ordinances in urban areas, the project manager of Clark's said. He also attributed the difficulties to heightened interest in the environment and residential density of rural New York state. "You have people living in rural areas here who work in cities. There is farmland, but there are more homeowners surrounding any proposed irrigation site. Whereas, in the Midwest, farms are larger and homes more spread out--it may be that the farmhouse on a 160-acre farm will be the only homeowner we have to deal with in getting a spray irrigation project accepted in the Midwest," Charles Doe, Clark's project manager, said.

A major problem in this Upstate New York area was a history of bad experiences with wastes from sauerkraut processing. Guy Tindall, Paris Town Attorney, described the problem in Paris: "For years the two sauerkraut

plants dumped their brine into White Creek in town. It was an open sewer. Even now with the new sewage system, when the plants are operating at full capacity, odor in the Town of Paris is bad, especially near the sewage plant. We are now working with the Department of Environmental Conservation and the sewage treatment operators to reduce the odor."

Homeowners near the former spray irrigation field at the Clark's factory in the Town of Garth complained of sauerkraut brine odors arising from Clark's lagoons during peak operating season. Another bad experience with spray irrigation had occurred in an adjoining town where a different food company sprayed vegetable processing wastewaters onto uncultivated land. The site was poorly managed, anaerobic conditions developed, and strong odors arose from the site. One Clark's employee said of this poorly managed site: "The only management technique that outfit understood was gravity."

Clark's project manager Doe confirmed this. "People are worried about odor, not about runoff and water pollution. Odor has been the big problem in the past. Problems have arisen in Garth from lagooning of wastewaters from sauerkraut at the Clark's plant."

Doe, who has operated spray irrigation systems for 23 years and set up spray irrigation operations in several other cities, gave the following advice:

-- Seek approval of the state agency first, or the federal agency if applicable, and then give the plans to the local government. (Note: this was a major objection of the town officials.) Otherwise the local government has nothing to approve.

-- Try not to offend any group. A lot of little groups feel jealous if they are not consulted. Keep them all posted. There may be disagreements within the township itself. We had one zoning board chairman who didn't even show the other board members our site plans.

-- Try to win endorsement of local farmers and the local Farm Bureau. Farmers should be able to understand the nutrient values of wastewater and the value to crop growth of spray irrigation of wastes.

-- Start an educational program on spray irrigation in the local community. Capable, well-educated citizens want to hear experienced experts who have technical knowledge but who can speak in layman's terms.

-- Inform all local units of government. Don't bypass them. Make yourself a part of the community and let people know exactly what you are doing. Answer people's questions. When they call with a problem, follow it up. Otherwise they will become antagonized and divide up into sides against the project.
-- Offer to fly people to a well-operated spray irrigation site. It is definitely worth it. The people who go are impressed.
-- Hire a local attorney to interpret the local zoning ordinances. Investigate cases that have been brought through the courts concerning zoning.
-- The question of whether to hire outside public relations men depends on how much you want to spend and the reaction of local citizens to outsiders. It is better to settle your own problems with neighbors.
-- Cooperate with the press, an important part of any community. You should be fair without telling them any confidential information. Be open to working with various news media, be able to defend your side of the story.

A Clark's official admitted that a local plant employee had repeatedly refused to give information to interested citizens and did not answer questions about the proposed plant. A refusal to communicate by anyone from management can undo much of the good will shown by other company officials.

As of the writing of this report, Clark's has proceeded with construction of its pumphouse and installation of irrigation equipment even though the suit against them by the Civil Liberties Association Against Dumping of Industrial Wastes on Agricultural Land is still pending. They have won the approval of the zoning boards in all three towns. A zoning official in Paris reports that the value of Wilmer Wood's land is being enhanced by the sophisticated drainage that Clark's is installing at the spray irrigation site that adjoins his property. Wood is a leading member of the Civil Liberties Association group. This town official further reported that Clark's is treating Wood with "kid gloves" and that all workers at the site listen to his complaints and "hear him out". The official said the drainage installed by Clark's will regulate seasonal flooding that formerly occurred on Wood's land. This natural surface runoff accumulated on Wood's land because it is lower than the land bought by Clark's for its spray irrigation site.

SEQUENCE OF EVENTS IN CLARK FOODS'

ATTEMPTS TO WIN APPROVAL OF SPRAY IRRIGATION

May 30, 1975	Town of Garth Planning Board asks Clark's for their preliminary plans on spray irrigation project.
July 24, 1975	Corporate representatives of Clark's meet with representatatives from all three towns to answer general questions, show slides, give short talk on spray irrigation.
August 6, 1975	Chairman of Town of Shawnee Planning Board writes several letters to town officials and farmers in Odeon, Ohio, concerning the impact of Clark's spray irrigation system there.
September 16, 1975	Public meeting for interested persons from all three towns at Cooks High School in Paris. More than 100 people attend.
December 8, 1975	Clark's submits application to the Department of Environmental Conservation for a permit to process waste waters via a spray irrigation system on a tract of land to be acquired mainly in the Town of Paris but also extending into the Towns of Garth and Shawnee, Sioux County.
March 23-24, 1976	Public hearing in Garth attended by representatives from all three towns. Clark's holds hearing as a requirement for state Department of Environmental Conservation permit.
August 2, 1976	Clark's spray irrigation plan is approved by the Department of Environmental Conservation.
March 21, 1977	Wilmer Wood writes letter to Town of Garth Zoning Enforcement Officer that Clark's has been bulldozing, building dikes to collect water, and installing corrugated pipe for offsite drainage. "This will not allow for natural drainage and will also disrupt land tile in immediate area," Wood says.
March 22, 1977	Town of Paris Zoning Board of Appeals gives Clark's spray irrigation project its approval.
April 19, 1977	Town of Garth Planning Board denies Clark's a building permit for a pumphouse to be constructed on Town of Garth land. Asks them to seek zoning use variance from the Town of Garth Zoning Board of Appeals.
April 22, 1977	Eight Paris residents called themselves the Civil Liberties Association Against the Dumping of Industrial Wastes on Agricultural Land sue the Town of Paris asking that the Zoning Board of Appeals decision be annulled and cancelled. Wilmer Wood is one of the group members.

SEQUENCE OF EVENTS (continued)

May 15, 1977	Clark's announces that unless the Town of Garth allows them a building permit for their pumphouse at the spray irrigation site, they may be forced to shut down their Garth vegetable processing plant and relocate in Michigan.
May 26, 1977	Public hearing before the Town of Garth Zoning Board of Appeals. Board approves a building permit for Clark's and the spray irrigation project in general.
May 31, 1977	Supreme Court residing in Sioux County rules that the Town of Paris Zoning Board of Appeals had no authority to render a decision concerning the Clark's spray irrigation site because Clark's had never submitted a formal application for approval to the board. Render Board's decision void.
June 16, 1977	Public hearing before Town of Paris Zoning Board of Appeals. Clark's has filed a formal application for approval of the site, if necessary. Zoning Board of Appeals finds that Clark's project does not violate the zoning ordinances of the Town of Paris.
Summer, 1977	Civil Liberties Association Against the Dumping of Industrial Wastes on Agricultural Land sues the Town of Paris and Clark's Foods, Inc.
December, 1977	Supreme Court residing in Sioux County hears case against Clark's brought by the Civil Liberties Association Against Dumping of Industrial Wastes on Agricultural Land and reserves judgement. No judgement as of January 16, 1978.

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